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Photodynamic therapy for skin cancer treatment

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In this work we describe the use of two chlorin e-6 based photosensitizers (radachlorin® and photolon®) to treat multiple basal cell carcinomas. Local photodynamic therapy (PDT) was performed for 39 patients with 172 basal cell carcinomas. The presented data show a favorable response, with an overall rate of complete remission of 98.3% and acceptable functional and aesthetic results. Therefore radachlorin®-PDT and photolon®-PDT appear to be good promising options for treatment of basal cell carcinomas.

Biography

Humberto Cabrera graduated in Physics in 1990 at the "ST Kliment Ojhridski" University of Sofia (Bulgaria). He was receiving a master degree in optics at the ISPJAE University in Havana and later he developed his Ph.D. thesis at the Venezuelan Institute for Scientific Research (IVIC). He was one the founder of the Applied Physics Centre at the IVIC-Mérida in which he is currently the head of the Applied Optics Laboratory and scientific leader of various research projects addressed to new laser technologies, industrial, and medical applications of lasers. The laboratory research is centered on optical techniques and methods for the characterization of media and processes in different scientific disciplines, in technology and biomedicine. It has facilities for thermal lens spectroscopy, classical, speckle and self-mixing interferometry, dynamical speckle techniques, and photodynamic therapy. Recently, he has studied the effect of chlorin derivatives in Venezuelan patients using photodynamic therapy method; using this protocol he has authored 4 works in 2012. In 2011, he was appointed Regular Associate Member of the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.

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A role for Nm23/NDPK blockade in the prevention of breast cancer metastases

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Despite dogma establishing high Nm23 gene expression levels with low metastatic potential and its designation as a tumor suppressor gene, the role of extracellular Nm23 protein is less well explored. Human breast cancer cells in culture release NDPK-A/B consistent with nucleoside trans-phosphorylase activity playing a role in tumor formation. Addition of purified conditioned medium from breast cancer cell cultures or bona fide NDPK to endothelial monolayers stimulates cell growth and formation of tubules reminiscent of capillary structures. We have suggested that extracellular ATP is formed by released NDPK and activates P2Y receptors on vascular endothelial cells to release vasoactive mediators such as nitric oxide, prostacyclin, and additional ATP which elicit vasodilation and propagate this effect down-stream where purine nucleotides may support intravasation/extravasation. Breast tumor cells that secrete NDPK promote their intravasation and extravasation by generating nucleotides to activate endothelial P2Y receptors that transactivate VEGFR-2. In SCID mice, autologous transplantation of MDA-MB-231 breast cancer cells forms primary tumors that metastasize to the lung. One week after implantation, NDPK-A/B appears in the blood stream and correlates positively with growth of the primary tumor. Removal of the primary after six weeks results in large numbers of metastases in the lung at 16 weeks. Treatment of animals two weeks following implantation with the NDPK blocker ellagic acid or the P2Y receptor antagonist MRS2179 markedly reduces metastases. The appearance of NDPK levels in the serum of women with breast cancer confirms and underscores the importance of examining the extracellular role of NDPK in the biology of breast cancer metastasis.

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